

AIDS Awareness in North Dakota—A Knowledge and Attitude Study of the General Population

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Synopsis

The AIDS program of the North Dakota Depart-

ment of Health and Consolidated Laboratories has provided a broad range of information concerning AIDS (acquired immunodeficiency syndrome) and HIV (human immunodeficiency virus) to State residents over the past few years. The ultimate intent of these intervention efforts was to decrease viral transmission.

To assess residents' knowledge and attitudes regarding AIDS, a statewide, random telephone study was conducted by AIDS Program personnel in the fall of 1987, 1988, and 1989, with technical assistance from the Bureau of Governmental Affairs, University of North Dakota. Study results indicated a majority of the respondents considered themselves to have at least "some" knowledge about AIDS. Participants' comprehension of viral transmission routes and prevention methods increased over the 3 years, yet misconceptions still exist. Identified areas of misconception were accentuated in subsequent State educational programs. When the results were compared with national studies, knowledge levels in North Dakota were generally similar to but frequently superior to the nationwide levels.

SINCE THE BEGINNING of the AIDS epidemic, a great deal of information concerning the human immunodeficiency virus (HIV) that causes AIDS, risky behaviors, "safer sex," and other preventive measures has been conveyed to the general public. Though some residents believe that HIV infection is not a problem in North Dakota, the State AIDS Program continues to stress the seriousness of the threat and to promote methods of protection.

The State AIDS Program has used brochures, pamphlets, videos, news releases, and presentations to provide information to residents regarding HIV infection and AIDS. Clarifying areas of uncertainty about viral transmission routes and emphasizing the importance of protection during sexual activity have been major components of the program.

We have analyzed and compared the results of telephone surveys of the AIDS knowledge and attitudes of North Dakota residents that were conducted in 1987, 1988, and 1989. To aid in assessing knowledge levels of North Dakota residents, results were compared with similar studies conducted by the National Center for Health Statistics (NCHS) in corresponding years.

Methods

Our surveys were conducted in September 1987, October 1988, and October 1989. A systematic random sampling protocol was employed to determine the study population. In this protocol, all listed residential telephone numbers in North Dakota were arranged in columns, and 1,000 numbers were randomly chosen (according to the 1980 census, approximately 96 percent of North Dakota households had telephones) (1). Half of the chosen numbers were designated for men respondents and the remaining half were designated for women. For a male-designated telephone number, for example, only a male household member would be interviewed. Respondents were determined by using a modified Troidahl-Carter method of selection designed to diminish the probability of over-representing those more likely to be home to answer the telephone (2). In addition, this method produces a sample representative of the adult population living in private households. Sampling errors and P-values were calculated using a 95 percent confidence interval.

For the study, interviewers were supplied a prepared manuscript that was read verbatim to the study participants. It included an explanation of the purpose of the study as well as the questions.

Results

The number of study respondents were 501 in 1987, 506 in 1988, and 505 in 1989. Data concerning refusal, no-answer, out-of-service, and incorrect gender contact were not collected. In 1989, 33 percent of the participants reported to know "a lot" about AIDS, compared to 30 percent in 1988 and 22 percent in 1987. These proportional increases were statistically significant at $P=.004$ from 1987 to 1988 and $P=.0001$ from 1987 to 1989. In addition, a significant proportional increase, from 46 percent to 61 percent ($P=.0001$), was noted from 1987 to 1988 concerning respondents identifying AIDS as a "great risk" to the public's health. Conversely, a significant decrease of 61 percent ($P<.0001$) was noted from 1988 to 1989's 44 percent.

Over the 3-year period, the participants' knowledge of transmission modes fluctuated little (table 1). Ninety percent or more reported that HIV could be spread from one person to another by intravenous needles, sexual relations, or blood transfusions. The number of participants who recognized that HIV could be spread from a pregnant mother to her unborn child increased significantly ($P=.042$) from 1987 to 1989, while a significant decrease ($P=.0003$) was noted for respondents who believed HIV could be transmitted through hand shaking (1987 to 1988). Concerning mosquitoes, 48 percent responded in 1987 that mosquitoes could not transmit HIV, 63 percent responded to that effect in 1988, and 59 percent in 1989. The increase from 1987 to 1989 was statistically significant ($P=.007$).

In 1988, 96 percent of the respondents regarded abstinence as a preventive method for HIV, and 80 percent responded similarly in 1989, indicating a significant decline ($P<.0001$) (table 2). Concerning monogamy, 93 percent reported this to be an effective preventive method for HIV in 1988 and 86 percent reported similarly in 1989, also indicating a significant decline ($P=.0002$). A significant decrease ($P=.0006$) was noted from 1988 when 90 percent recognized condoms as effective barriers for HIV, in contrast with 84 percent in 1989. In 1988 and 1989, nearly two-thirds of the respondents reported that diaphragms and spermicidal jellies were not effective protection, while nearly 4 of 5 reported similarly for birth control pills.

Table 1. Percent distribution of responses to telephone surveys of North Dakota residents on HIV transmission routes, 1987-89

Can AIDS be spread from one person to another by—	1989 (N=505)	1988 (N=506)	1987 (N=501)
Sharing intravenous needles:			
Yes	98	98	97
No	1	1	1
Don't know	1	1	2
Sexual relations between men:			
Yes	96	96	96
No	0	1	1
Don't know	4	3	3
Sexual relations between man and woman:			
Yes	99	96	95
No	1	2	2
Don't know	0	2	3
Blood transfusion:			
Yes	94	92	94
No	4	6	3
Don't know	2	2	3
From a pregnant woman to baby:			
Yes	91	88	87
No	2	3	2
Don't know	7	9	11
Mosquitoes:			
Yes	19	16	26
No	59	63	48
Don't know	22	21	26
Shaking hands:			
Yes	1	2	2
No	97	97	92
Don't know	2	1	6
Donating blood:			
Yes	21	...	...
No	70	...	...
Don't know	9	...	...

In 1988 and 1989, approximately 9 percent of the participants indicated they knew someone with AIDS. From 1987 to 1988, a significant increase from 79 to 84 percent ($P=.04$) was noted regarding the proportions of respondents who indicated that a child with AIDS should be allowed to attend school. In 1989, when asked if a child with AIDS should be allowed to attend school in their community, 71 percent answered in the affirmative.

Discussion

Throughout the study, a significant increase in the proportion of respondents who reported to have at least "some" knowledge of AIDS was observed. This increase may indicate that residents' exposure to educational information concerning AIDS has increased over the years. From 1988 to 1989, there was a significant decline in the number of residents who believed AIDS was a "great risk"

Table 2. Percent distribution of North Dakota residents' opinions on methods of AIDS prevention, telephone surveys, 1988 and 1989

Method	Very effective		Somewhat effective		Minimally effective	Not at all effective		Don't know how effective		Don't know the method		Refused to answer
	1989	1988	1989	1988	1989	1989	1988	1989	1988	1989	1988	1988
Abstinence	78	94	2	2	1	5	2	8	1	6	1	1
Mutual monogamy.....	69	83	17	10	3	5	4	2	2	5	1	1
Condom	42	34	42	56	6	6	5	2	4	2	1	1
Diaphragm.....	4	2	12	16	7	64	68	6	12	7	2	0
Spermicidal jelly	3	2	10	15	7	62	64	8	15	11	3	1
Birth control pill.....	3	2	3	4	2	82	85	3	8	6	0	1

Table 3. A comparison of North Dakota (ND) and National Center for Health Statistics (NCHS) survey results, selected findings by percentages in 1987, 1988, and 1989

Question	1987		1988		1989	
	ND	NCHS	ND	NCHS	ND	NCHS
How informed would you consider yourself about the disease of AIDS?:						
A lot or some	79	60	86	65	87	67
Can AIDS be spread from one person to another by:						
Needle sharing.....	97	94	98	95	98	97
Sexual relations.....	96	93	96	92	98	95
Pregnant woman to baby	94	91	92	92	94	95
Shaking hands ¹	92	80	97	82	97	84
Mosquitoes	26	38	16	26	19	27
How effective are the following methods in preventing HIV transmission —						
Monogamous relationship: somewhat or very.....	...	...	93	81	86	90
Condom: somewhat or very .....	...	...	90	82	84	85
Spermicidal jelly: somewhat or very....	...	...	17	19	13	17
Diaphragm: somewhat or very.....	...	...	18	18	16	14
Have you ever personally known anyone with AIDS or the AIDS virus? .....	...	...	9	10	8	12

¹Percentages are for the answer "no."

to the public's health. One explanation for this decline may be that State residents believed the public's exposure to AIDS educational material over the past decade increased awareness of HIV, making it less of a threat to the public's health. Another interpretation might be that increasing proportions of residents believe there is little need for concern because HIV infections and AIDS are non-existent in the State.

Overall, North Dakota respondents were knowledgeable about HIV transmission routes. An area of misconception, however, involved mosquitoes. Although the number of respondents who identified mosquitoes as vectors had declined each year, one in five still identified mosquitoes as transporters of this pathogen. This suggests that educational reinforcement is still needed in this area.

The 1988 and 1989 studies sought to determine which methods of birth control residents believed to be protective against HIV transmission. From

1988 to 1989, we recorded a significant decline in the proportion of respondents who reported abstinence and monogamy to be effective methods of prevention. This drop may have been due to unfamiliarity with the terms (the terms used in the study were not defined for participants) or that the terms were vague (lack of term precision). Although most of the respondents recognized condoms as effective protective devices, the number of affirmative responses declined from 1988 and 1989. Increased negative publicity surrounding condom reliability may have influenced this decline.

A majority of respondents believed diaphragms, spermicidal jellies, and birth control pills were not effective prevention measures, but many reported that they were not familiar with the methods or were not aware of their effectiveness. These misconceptions may be a consequence of conflicting information or none at all.

Few participants reported that they knew someone with AIDS. In spite of these small proportions, perhaps exposure to people with the disease has increased awareness of AIDS as a public health concern.

Comparison of Study Results

The findings of the North Dakota study were compared with the results of national surveys conducted by the National Center for Health Statistics (NCHS). The most recent national data were collected in the summer of 1989. The North Dakota study was conducted in the fall to minimize the nonresponse bias because so many State residents are employed in agriculture. Using similar season data for both studies was desired, but no such option existed due to delays between Federal reporting and publication; hence similar season data was selected within each group to decrease seasonal biases.

Race was not determined in the North Dakota study due to limited financial resources. (Ninety-six percent of the 1980 North Dakota population was white compared with 83 percent nationally) (3).

A comparison of North Dakota and NCHS results for the 3 years shows proportionally more State residents reported knowing "a lot" or "some" information about AIDS (4-6). In 1987, 19 percent more North Dakotans reported being knowledgeable about AIDS and HIV than respondents in the national survey, 21 percent more in 1988, and 20 percent more in 1989 (table 3).

The comprehension of North Dakota and NCHS study participants of needle sharing, sexual relations, and mother-baby modes of transmission were comparable. Ten to 15 percent more North Dakota respondents than national study participants, however, reported that hand shaking was not a transmission route. In addition, proportionally fewer North Dakota respondents identified mosquitoes as vectors than did national study respondents.

As previously mentioned, the proportion of North Dakota residents reporting monogamy and abstinence as effective preventive methods declined from 1988 to 1989. These proportions, however, were larger than those recorded nationally. Proportionally, North Dakota residents' perceptions of condom effectiveness was greater than those recorded nationally in 1988, but equivalent in 1989.

According to 1988 NCHS data, 10 percent of adults in the United States reported to know someone with AIDS or the AIDS virus. The corresponding figure in 1989 was 12 percent. North Dakota respondents reported similar experiences.

Conclusion

From an analysis of the data collected over the past 3 years, it is apparent that increasing numbers of North Dakota residents believed they had at least "some" knowledge of AIDS. This belief was supported by findings that showed the majority of the participants were knowledgeable about HIV transmission routes and prevention methods. Misconceptions, however, are still prevalent. The study indicated that mosquitoes and HIV transmission, the effectiveness of condoms, abstinence, and monogamy in preventing viral transmission, and the ineffectiveness of diaphragms, spermicidal jelly (alone), and birth control pills as barriers to HIV all require further emphasis.

When comparing data from North Dakota with the nation's, it becomes evident that State residents' knowledge levels of AIDS transmission and prevention methods are equivalent to or higher than corresponding national levels.

Although the incidence of AIDS and HIV infections in North Dakota is relatively small, the ultimate intent of the North Dakota AIDS educational efforts has been to decrease the incidence of HIV transmission and increase residents' knowledge of this disease.

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